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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,972	10/31/2003	Chandrakant D. Patel	100111090-2	8978

7590 05/04/2004

HEWLETT-PACKARD COMPANY  
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EXAMINER

NORMAN, MARC E

ART UNIT	PAPER NUMBER
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3744

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/697,972

Applicant(s)

PATEL ET AL.

Examiner

Marc E. Norman

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,9-12,18,19,24-27 and 30-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,9-12,18,19,24-27 and 30-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/31/03.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 18, 24-27, 30-34, 36, 37, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stahl et al. in view of Shaw.

As per claims 1, 39, and 40, Stahl et al. discloses a method for cooling a computer room comprising providing a plurality of heat exchangers at various locations in the room (each interface of fans 130 and heat exchange path 110 represent a functional heat exchange unit) including fans 130 configured to deliver air to respective locations in the room; supplying the heat exchangers with cooling fluid (via path 110), cooling the air through fans 130 with the cooling fluid in path 130; and controlling the temperature of the cooling fluid (column 3, lines 52-54) and air delivery based on sensed temperature/desired cooling capacity (column 3, line 66

Art Unit: 3744

– column 4, line 10). Stahl et al does not teach the compressor being a variable capacity compressor. However, variable capacity compressors are common and well-known in the art, and commonly applied to multiple heat exchanger air conditioning systems. Shaw for example teaches a variable capacity compressor used within a multiple heat exchanger chiller system (Figures 7b & 7c). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a variable capacity compressor such as that of Shaw to the system of Stahl et al. for the purpose of variably controlling refrigerant flow in order to control the amount of cooling performed by the system.

As per claims 2, 18, and 30, Stahl et al. further teaches the coolant temperature being automatically controlled (column 3, lines 52-54; column 5, lines 43-45; claim 18).

As per claims 3, 32, 36, and 37, controlling refrigerant flow by the variable speed compressor as discussed above inherently controls the refrigerant temperature.

As per claim 24, Stahl et al. teaches control of heat exchanger 110 (claim 18 of Stahl et al.).

As per claims 25-27, Stahl et al. teaches the control of the heat exchangers and the cooling device being interrelated (see combination of claims 1 and 18 of Stahl et al.)(claim 25), and controlling according to temperature/desired cooling capacity (column 3, line 66 – column 4, line 10) as discussed above (claim 27). The variable speed compressor control is taught by Shaw also as discussed above (claim 26).

As per claim 31, Stahl et al. teaches controlling coolant flow rates (column 3, lines 52-54; column 5, lines 43-45).

Art Unit: 3744

As per claim 34, Stahl et al. teaches automatic control (i.e., an automatic algorithm) of coolant temperature (column 3, lines 52-54).

Claims 5, 9-11, 19, 33, 35, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stahl et al. in view of Shaw as set forth above and further in view of Nakanishi et al.

As per claims 5, 9-11, 33, and 38, Stahl et al does not teach the controls being based on a predetermined range. Nakanishi et al. teaches a method of cooling a computer room wherein the controller determines if sensed temperatures are within a predetermined range (Abstract, lines 13-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine these features of Nakanishi et al. to the system of Stahl et al. for the purpose of refining the control of temperature within the room, particularly since both references are directed to controlling the distribution of temperature within a computer room.

As per claim 19, while Stahl et al. does not specifically describe the arrangement of temperature sensors in conjunction with the controller, it does disclose, for example, automatically varying the speed of the fans to provide desired cooling capacity. Nakanishi et al. teaches an air conditioner control circuit receiving condition information from the temperature sensors (see Figure 5; column 4, lines 10-30), controlling fan speed/air delivery, and memory (of PC 70) controlling fans and AC circuit (see Figure 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply these features of the methodology of Nakanishi et al. to the system of Stahl et al. for the purpose of carrying out the automatic fan control according to cooling capacity as disclosed.

Art Unit: 3744

As per claims 35, Stahl et al. does not specifically show the air being recirculated from the room. However, air recirculation is common and well known in the art of air conditioning systems. Nakanishi et al. for example teaches receiving air from the room via duct 30. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine this feature of Nakanishi et al. with the system of Stahl et al. for the purpose of improving the efficiency of the system by recirculating air that has already been cooled.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc E. Norman whose telephone number is 703-305-2711. The examiner can normally be reached on Mon.-Fri., 8:00-5:30, with first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**MARC NORMAN  
PRIMARY EXAMINER**